IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Joar Vaage
Appl. No.: 09/936,390
Filed: September 10, 2001
Docket No.: 1781
Conf. No.: 3776
Title: ***METHOD AND DEVICE FOR STEREO PROJECTION OF PICTURES***

Art Unit: 2872
Examiner: Audrey Y. Chang

Action: ***Amended Appeal Brief***
Date: September 12, 2007

To: Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal is from the Final Rejection of claims 13 and 15-18 in the above-referenced patent application. A Notice of Appeal was electronically filed on November 28, 2006. An Appeal Brief was timely filed on April 30, 2007. A Notice of Non-Compliant Appeal Brief dated September 4, 2007 was received by Appellant. An Amended Appeal Brief is due one month from the mailing date of the Notification of Non-Compliance, making this Amended Brief due October 4, 2007.

In compliance with 37 C.F.R. § 41.37 and M.P.E.P. 1205.02, Appellant submits the following as his Appeal Brief in this matter through the undersigned attorney or agent.

I. REAL PARTY IN INTEREST

The subject application is owned by Cyviz AS of Stavanger, Norway.

II. RELATED APPEALS AND INTERFERENCES

This is the first time that Applicant/Appellant has appealed the rejection of its application. There are no other appeals or interferences known to the Appellant or the Appellant's legal representatives that will have a bearing on the Board's decision to be rendered in this Appeal.

III. STATUS OF CLAIMS

Claims 13 and 15-18 are currently pending in the application, have been finally rejected, and are hereby appealed. Claims 1-12, 19, and 25-28 are canceled. Claims 14, 20-24, and 29-41 are withdrawn. No claims have been allowed.

IV. STATUS OF AMENDMENTS

The Examiner's Office Action made final, dated August 28, 2006, was in response to Appellant's Amendment of June 21, 2006. Appellant filed its Notice of Appeal on November 28, 2006.

A proposed Amendment was submitted April 9, 2007 pursuant to 37 C.F.R. §41.33(a) such that it was filed after the date of filing the appeal and prior to the date of filing this brief. In that Amendment it was proposed to amend claim 13 in order to address the Examiner's 35 U.S.C. §112 and §132(a) objections to claim 13 thereby placing the claims in better form for consideration on appeal. Also in the proposed amendment, claim 16 was canceled.

Appellant received an Advisory Action dated April 13, 2007 indicating that the proposed amendment would not be entered. The Examiner contends that the amendment does not place the claims in better form for consideration on Appeal. The Examiner believes that the amendment changes the scope of the claims requiring

further search and consideration. Appellant would like to point out that the amendment to claim 13 deletes "memory" and replaces it with "picture." For the purpose of searching the prior art these terms are interchangeable; however, the term picture more closely follows the language of the specification. As to the Examiner's contention that this would require a new search and consideration, the Appellant notes that in the Final Office Action the Examiner has already addressed claim 13 (Final Office Action: page 5, line 19).

Attached hereto as CLAIMS APPENDIX is a copy of the current version of pending claims 13 and 15-18. However, pursuant to 37 C.F.R. §41.37(c)(2) the attached claims do not reflect the proposed amendments to claim 13 filed subsequent to appeal, because that amendment has not been entered, as of the filing of this brief.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is broadly directed to a method and a device for stereoprojection of pictures. In particular, a device for stereo projection of pictures represented by a picture signal which alternates periodically between pictures intended for right eye and pictures intended for left eye is disclosed.

Beginning on page 6, line 14 of the specification and with reference to figure 1, the reference numeral 1 denotes a right projector adapted to project a picture to be seen by the right eye, in registry with a projected picture from a corresponding, left projector 2 projecting a picture to be seen by the left eye.

Right projector 1 is coupled to and receives its picture signal from a right picture generator 3. Left projector 2 is coupled correspondingly to a left picture generator 4. Each picture generator 3, 4 is adapted to scan a picture storage and generate a picture signal causing the projector 1, 2 belonging thereto, to project a

visible picture belonging thereto, on a screen. As noted in the Summary of the Invention, page 4, line 19, the picture storages and their associated picture areas are typically a cache memory in a computer (see also page 5, lines 3-7).

Right picture generator 3 is adapted to scan periodically an area within a right picture storage 5, and left picture generator 4 is correspondingly adapted to scan periodically an area within a left picture storage 6. Right picture storage 5 is divided into a first right picture area 7 and a second right picture area 8. Left picture storage 6 is correspondingly divided into a first left picture area 9 and a second left picture area 10.

Continuing on page 7 line 6, a right picture selector 11 is adapted to react on a control signal and connects, alternately, right picture generator 3 to first or second picture area 7, 8 in right picture storage 5 and, thus, determines if right projector 1 projects a picture based on first or second picture area 7, 8. A left picture selector 12 is, correspondingly, adapted to react on a control signal, alternately connecting left picture generator 4 to first or second picture area 9, 10 in left picture storage 6, thus determining if left projector 2 projects a picture based on first or second picture area 9, 10.

A right decoder 13 is adapted to receive a picture signal and store values representing the picture signal, in right picture storage 5 on a format which right picture generator 3 is adapted to convert to picture signals for right projector 1. A left decoder 14 is, correspondingly, adapted to receive a picture signal and store values representing the picture signal, in left picture storage 6 on a format, which left picture generator 4 is adapted to convert into picture signals for left projector 2.

Between right decoder 13 and right picture storage 5, is disposed a right area selector 15 adapted to respond to a control signal, alternately connecting the

decoder 13 to second or first picture area 8, 7 in right picture storage 5 and, thus, determine whether the decoder 13 stores values in second or first picture area 8, 7. Right picture selector 11 and right area selector 15 alternate such that right picture generator 3 and right decoder 13 are coupled to opposite picture area 7, 8 in right picture storage 5. Intermediate left decoder 14 and left picture storage 6 is, correspondingly, disposed a left area selector 16 adapted to respond to a control signal, alternately connecting the decoder 14 to second or first picture area 10, 9 in left picture storage 6 and, thus, determine whether the decoder 14 is storing values in second or first picture area 10, 9. Left picture selector 12 and left area selector 16 alternate such that left picture generator 4 and left decoder 14 are coupled to opposite picture area 9, 10 in left picture storage 6. A page selector 17 is adapted to respond to control signals and alternately connect a conductor 18 for an incoming picture signal to right decoder 13 or left decoder 14.

Continuing on page 8, line 12, a controller 19 is adapted to sense the incoming picture signal and recognize signal values or signal codes defining a new picture and giving switching signals to the page selector 17 for each picture. Right decoder 13 is adapted to give a switching signal to right area selector 15 and right picture selector 11 each and every time the decoder has stored a new picture in right picture storage 5. Left decoder 14 is adapted to give a switching signal to left area selector 16 and left picture selector 12 each and every time the decoder has stored a new picture in right picture storage 6.

Each picture generator 3, 4 feeds a new picture, respectively, to right or left projector 1, 2, following a fixed picture rate, e.g. sixty times per second, even if the incoming picture rate varies. In lack of new picture information, the picture generators 3, 4 will repeat last picture.

The right picture selector may alternate while the right picture generator 3 is in the process of transferring picture signals to the projector 1. Advantageously, the picture generator 3 may be formed with internal storage, not shown, having a capacity for one picture, only scanning right picture storage 5 each time it has completed the transfer of one picture to right projector 1. Thus, a projected picture consisting of parts from two pictures is avoided. Correspondingly, left picture selector 12 may come to alternate while left picture generator 4 is in the course of transferring picture signals to the projector 2. Advantageously, the picture generator 4 may also be formed with internal storage, not shown, having a capacity for one picture, only scanning left picture storage 6 each and every time it has completed to transfer a picture to left projector 2. Thus, a projected picture consisting of parts from two pictures is avoided.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following issues are believed by Appellant to be important for purposes of this Appeal:

A. Has the Examiner properly rejected claims 13 and 15-18 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement?

B. Has the Examiner established a *prima facie* case of obviousness under 35 U.S.C. §103(a) in rejecting claims 13, 17, and 18 as being unpatentable over Patent No. 6,522,351 to Park ("Park '351) in view of U.S. Patent No. 5,416,510 to Lipton et al ("Lipton '510")?

C. Has the Examiner established a *prima facie* case of obviousness under 35 U.S.C. §103(a) in rejecting claims 13, 17, and 18 as being unpatentable over Patent No. 4,954,890 to Park ("Park '890) in view of U.S. Patent No. 5,982,538 to Shikama et al ("Shikama '538")?

GROUPING OF THE CLAIMS: Appellant asserts that claims 13, 17, and 18 each stands alone. If claim 13 falls then claims 15 and 16 also fall.

VII. ARGUMENT

A *prima facie* case of obviousness requires that the prior art reference (or references when combined) teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging patentability of that claim against the prior art."); MPEP §2143.03.

Further, a *prima facie* case of obviousness also requires that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Vaeck*, supra; *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 U.S.P.Q. 2d 1941 (Fed. Cir. 1992). In establishing a *prima facie* case of obviousness under 35 U.S.C. §103, it is incumbent upon the Examiner to provide a reason why one of ordinary skill in the art would have been led to modify a prior art reference or to combine reference teachings to arrive at the claimed invention. *See Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Int. 1985). Furthermore, where modifying the reference would destroy the intent, purpose, or function of the reference, it is improper to make a rejection under 35 U.S.C. §103. Where modifying the reference would destroy the intent, purpose, or function of the reference, there is no technological motivation for the modification; in fact, there is a disincentive to make such a modification. *See In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125.

The requisite motivation must stem from some teaching, suggestion or inference in the prior art as a whole or from the knowledge generally available to one of ordinary skill in the art and not from the applicant's disclosure. *See, e.g., Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1052, 5 U.S.P.Q.2d 1434 (Fed. Cir.), *cert denied*, 488 U.S. 825 (1988); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (The teaching or suggestion to make the claimed combination must not be based on applicant's disclosure); MPEP §2142. That is, it is improper to use hindsight reconstruction of the claimed invention using the applicant's structure as a template. *In re Gorman*, 18 U.S.P.Q. 2d 1885 (Fed. Cir. 1991). When the only suggestion to combine the teachings of the references in the manner proposed by the Examiner is found in the hindsight accorded one who first views the applicant's disclosure, an obviousness rejection under 35 U.S.C. §103 is improper. *See In re Fritch*, 972 F.2d 1260, 1266, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992).

It is axiomatic that the mere fact that the prior art structure could be modified does not make such a modification obvious unless the prior art *suggests the desirability of doing so*. *See In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984); *In re Mills*, 916 F. 2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); MPEP § 2143.01. Further, the fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

It is error to find obviousness where references teach away from the invention at hand. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988); *In re Nielson*, 816 F.2d 1567, 1571 (Fed. Cir. 1987). Teaching away is the antithesis of an applied reference suggesting that a person ordinarily skilled in the art go in the claimed direction.

Furthermore, it is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983).

A. The Examiner has improperly rejected claims 13 and 15-18 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Claim 13 recites that "said first picture storage and said second picture storage are each divided into a plurality of memory areas each said memory area capable of storing a picture..." Although the Examiner rejected the claims based on the term "memory areas," the Examiner examined the claims on the merits using the term "memory areas." This is proper under MPEP §2163.06(I) because the "examiner should still consider the subject matter added to the claim in making rejections based on prior art since the new matter rejection may be overcome by applicant" (MPEP §2163.06(I)). The Examiner objects to this terminology as new matter under 35 U.S.C. §132(a) and Appellant assumes that the Examiner's §112 rejection is based on this objection according to MPEP §2163.06(I), which states that if new matter is added to the claims, the examiner should reject the claims under §112, second paragraph.

However, the Examiner's rejection under §112 of claims 13 and 15-18 is improper because the Summary of the Invention, as originally filed, discloses "a first digital picture which is stored in a first digital storage device, typically a cache memory in a computer" (page 4, line 19). The Summary goes on to recite that "each of said first and second digital storage device may advantageously be divided into two or more areas used cyclically. Thus, a third picture can be received, decoded, digitized and stored separately from the first picture and without overwriting the same" (page 5, lines 3-7). Thus the term "memory area" as used in claim 13 is

supported by the specification and does not constitute new matter under 35 U.S.C. §132(a).

Furthermore, MPEP §2163.07(I) states that "mere rephrasing of a passage does not constitute new matter. Accordingly, a rewording of a passage where the same meaning remains intact is permissible. *In re Anderson*, 471 F.2d 1237, 176 USPQ 331 (CCPA 1973)"; (MPEP §2163.07(I)). The term "memory area" is simply a rephrasing of the term "picture area." The Detailed Description of the Preferred Embodiments, as originally filed, recites "right picture storage 5 is divided into a first right picture area 7 and a second right picture area 8" (page 7, lines 1-5). "Picture area" is clearly used with the same meaning as "memory area" in this application. Based on the foregoing analysis the Appellant submits that the term "memory area" as recited in claim 13 does not constitute new matter under 35 U.S.C. §132(a) and, therefore, the Examiner's rejection under 35 U.S.C. §112, first paragraph, is improper.

B. The Examiner has failed to established a *prima facie* case of obviousness under 35 U.S.C. §103(a) in rejecting claims 13, 17, and 18 as being unpatentable over Park '351 in view of Lipton '510.

Claim 13

Claim 13 recites that "each odd numbered picture signal received, is transferred to a first projector, and whereby second and, thereafter each even numbered picture signal received, is transferred to a second projector." Park '351 explicitly teaches away from using two projectors. Park '351 states that "conventional stereoscopic image display apparatuses have drawbacks in that they require two separate projectors in order that two images ...be separately displayed" (col. 2, lines 16-22). Park '351 goes on to state that "an object of the present invention is to solve the problems involved in the prior art, and to provide a

stereoscopic image ... using a single projector" (col. 2, lines 25-32). Park '351 repeats language that teaches away from using two projectors in the detailed description (col. 4, lines 7-16 and 59-65).

It is error to find obviousness where references teach away from the invention at hand. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988); *In re Nielson*, 816 F.2d 1567, 1571 (Fed. Cir. 1987). Teaching away is the antithesis to the requirement that a reference must suggest to a person ordinarily skilled in the art to combine references. Furthermore, it is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983). Not only is there no motivation or suggesting to combine Park '351 and Lipton '510, Park '351 teaches away from the combination. Thus, it is improper for the Examiner to combine these references and the combination fails to establish prima facie obviousness.

Even assuming arguendo, one would be motivated to combine the applied references, they do not teach or suggest all the claim limitations recited in claim 13. A *prima facie* case of obviousness requires that the prior art reference (or references when combined) teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging patentability of that claim against the prior art."); MPEP §2143.03. Claim 13 recites "said picture signals for odd-numbered pictures being decoded and stored in a first picture storage, which is scanned periodically and projected by said first projector, and said picture signals for even numbered pictures being decoded and stored in a second picture storage, which is scanned periodically and projected by said second projector" (See Figures 1

and 2). As explained in paragraph 15 of the Declaration of Anne Solveig Tønnesen, dated December 5, 2005 (the "Second Tønnesen Declaration"), the claimed invention decomposes combined left and right picture signals into signals for the left and right projector.[1] Park '351, on the other hand, discloses a system where "the display apparatus receives the left and right image signals produced from the two video sources, and forms the synthesized stereoscopic image signal" (col. 4, lines 3-6). "The multiplexing section 130 alternately selects the double-scanned image signals 412 and 414 and produces a synthesized image signal 420" (col. 3, lines 61-63; Figure 5). Park '351 clearly fails to disclose the claimed invention.

Park '351 clearly fails to disclose the claimed invention, however, the Examiner makes the bald assertion that various elements recited in claim 13 are "implicitly disclosed" in Park '351. MPEP §2144.01 does note that it is proper to "take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." MPEP §2144.01. However, in both of the cases cited in §2144.01, there was language in the reference, which would reasonably lead one skilled in the art to infer the teachings at issue. See *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968); *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976). Here, however, there is no such language to reasonably support such inferences. For example, the Examiner contends that in Park '351 "it is also implicitly true that certain picture storages for the left and right eye image signals are needed for storing the left eye and right eye image signals such that repeated scanning or periodical scanning the storages with the left and right eye image signals is performed, (double

[1] The Declaration of Anne Solveig Tønnesen dated December 5, 2005 is attached in the Evidence Appendix.

scanning sections 122 and 124, or 212 and 214, or 312 and 314, in Figures 2 - 4), to generate the double scanned image signals which are consequently transmitted to the projector for projection" (Final Office Action: Para. 6, line 10). The Examiner fails to cite language in Park '351 in support of this inference. Contrary to the Examiner's position, an analysis of Park '351 would lead one skilled in the art to infer that Park '351 does not contemplate the need for "picture storages." Park '351 recites in the Detailed Description:

> A double-scanning section 120, composed of a pair of double-scanning circuits 122 and 124, repeatedly scans twice each line of left and right image signals provided from the receiving section 110, and produces left and right double scanned image signals having a horizontal frequency, which is twice as high as the horizontal frequency of the cameras' signals. A multiplexing section 130 alternately selects each line of the left and right double scanned image signals at a switching speed of the doubled horizontal frequency and produces a line-interlaced synthesized image signal. A projection type display section 150 projects the synthesized image signal onto a display screen 20. (col. 3, lines 38-50).

This language would reasonably lead one skilled in the art to infer that Park '351 contemplates using circuitry to handle the image signals in real time without storing the signals at all. Park '351 here discloses scanning circuits, multiplexers, and switching speeds, all of which infer handling the image signals without storage.

Alternatively as explained in the Second Tønnesen Declaration (para. 17), the Examiner may be correct to assume that Park '351 teaches the left eye pictures and the right eye pictures to be separately stored, but they are not separated and then separately stored, as in the present invention. Before a decoding and storage takes place in the present invention, the left eye pictures are separated from the right eye pictures and transferred to different picture storages. These pictures are then projected so that what is stored is what is projected. In Park '351, on the other hand,

storage is presumably accomplished by the receiving sections 112 and 114 in the embodiment of Fig. 2. The receiving circuit generates and stores the L and R image signals, which are transformed by the double scanning circuit before projection. (Fig. 5 and Col. 3, lines 50-60) Thus, what goes in is different than what comes out. The Examiner states that Park '351 "does teach explicitly that the left eye picture and the right eye pictures are separated, stored, decoded and scanned . . . " However, since there are 2 cameras in Park, there is no need to decode at this point to separate out the left from the right image signals.

Furthermore, where Park '351 does contemplate using memory or storage, he explicitly discloses it in the Detailed Description. For instance, Park '351 recites that "the signal adjusting section 140 is composed of buffers [i.e. temporary storage] and filters for adjusting the signal level and removing noise from the synthesized image signal 420" (col. 3, line 64).

Accordingly, Appellant submits that claim 13 and all claims depending therefrom should be allowed because there is no motivation to combine the references; the references fail to disclose all of the elements recited in the rejected claims; and there is nothing in the references to reasonably support the Examiner's contention that the missing elements are implicitly disclosed.

Claim 17

Claim 17 recites that the first and second picture storages are scanned by first and second picture generators, which are coupled to the projectors. The Examiner contends that "the left double scanning section and the right double scanning section taught by Park serve as the first and second picture generator" (Final Office Action: page 6, line 6).

A *prima facie* case of obviousness requires that the prior art reference (or references when combined) teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging patentability of that claim against the prior art."); MPEP §2143.03.

As is explained in the specification of the present application the picture generator converts data from a storage format to picture signals for the projector. (page 7, line 20). According to Park '351 "the double scanning circuits 122 and 124 scan each line of the left and right image signals 402 and 404 twice, and output the double scanned image signals 412 and 414, having 2n horizontal lines. The multiplexing section 130 alternately selects the double-scanned image signals and produces a synthesized image signal 420" (col 3, line 56 – 62). Neither the double scanning circuits nor the multiplexing section converts from a storage format to the picture signal. Furthermore, as explained in the foregoing analysis pertaining to claim 13 above, there is no picture storage disclosed in Park '351, from which the double scanning circuits can scan storage formatted data.

Accordingly, Appellant submits that claim 17 and all claims depending therefrom should be allowed because the references fail to disclose all of the elements recited in the rejected claims.

Claim 18

Claim 18 recites that the picture generators are able to scan their associated picture storage at a scanning rate different than an incoming rate of the picture signal. The Examiner contends that "the double scanning section allows scanning of

the image signals at a rate different from the incoming rate of the incoming picture signal" (Final Office Action: page 6, line 7).

A *prima facie* case of obviousness requires that the prior art reference (or references when combined) teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging patentability of that claim against the prior art."); MPEP §2143.03.

As explained in the foregoing analysis pertaining to claim 13 above, there is no picture storage disclosed in Park '351, from which the double scanning circuits can scan storage formatted data at a rate different than the incoming rate.

Accordingly, Appellant submits that claim 18 should be allowed because the references fail to disclose all of the elements recited in the rejected claim.

C. The Examiner has failed to established a *prima facie* case of obviousness under 35 U.S.C. §103(a) in rejecting claims 13, 17, and 18 as being unpatentable over Park '890 in view of Shikama '538.

Claim 13

Claim 13 recites that the "first picture storage and said second picture storage are each divided into a plurality of memory areas each said memory area capable of storing a picture and selectable for scanning of a stored picture or for storing a picture, and when one memory area in the first picture storage is selected for scanning by the first projector, a different memory area in the first picture storage is selected for storing, and when one memory area in the second picture storage is selected for scanning by the second projector, a different memory area in the second picture storage is selected for storing." The Examiner concedes that Park '890 fails to disclose first and second picture storages which are each divided into a plurality of

memory areas. However the examiner believes that it would have been obvious to one skilled in the art to apply the teachings of Shikama '538 to modify Park '892 to use picture storage having a plurality of memory areas.

A *prima facie* case of obviousness requires that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Vaeck*, supra; *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 U.S.P.Q. 2d 1941 (Fed. Cir. 1992). The requisite motivation must stem from some teaching, suggestion or inference in the prior art as a whole or from the knowledge generally available to one of ordinary skill in the art and not from the applicant's disclosure. *See, e.g., Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1052, 5 U.S.P.Q.2d 1434 (Fed. Cir.), *cert denied*, 488 U.S. 825 (1988); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (The teaching or suggestion to make the claimed combination must not be based on applicant's disclosure); MPEP §2142. That is, it is improper to use hindsight reconstruction of the claimed invention using the applicant's structure as a template. *In re Gorman*, 18 U.S.P.Q. 2d 1885 (Fed. Cir. 1991). When the only suggestion to combine the teachings of the references in the manner proposed by the Examiner is found in the hindsight accorded one who first views the applicant's disclosure, an obviousness rejection under 35 U.S.C. §103 is improper. *See In re Fritch*, 972 F.2d 1260, 1266, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992). It is axiomatic that the mere fact that the prior art structure could be modified does not make such a modification obvious unless the prior art *suggests the desirability of doing so*. *See In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984); *In re Mills*, 916 F. 2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); MPEP § 2143.01. Further, the fact that the claimed invention is within

the capabilities of one of ordinary skill in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

As motivation for combining these references the Examiner states that there is a "benefit [of] allowing more than one perspective views to be presented and stereoscopically projected" (Final Office Action: page 7, line 16). Neither Park '890 nor Shikama '853 make such a suggestion. Furthermore, Park '890 already projects more than one perspective view. Thus the Examiner's suggested motivation to combine these references does not make sense. The true benefit, as explained in the present application, for having first and second picture storages, which are each divided into a plurality of memory areas, is to allow great tolerance with respect to the incoming picture rate, thus allowing each projector to operate at a normal rate regardless of the incoming picture rate (page 5, line 17). Neither Park '890 nor Shikama '538 include such a suggestion. The Examiner is using hindsight reasoning to combine these references and formulate a hypothetical motivation therefor.

Furthermore, as explained in paragraphs 40-42 of the Declaration of Anne Solveig Tønnesen, dated May 27, 2005 (the "First Tønnesen Declaration"), Shikama '538, teaches scanning one raster at a time from the left and right frame memories.[2] The prior art, thus, neither implicitly or explicitly describes the periodic scanning of first and second picture storages, but rather portions of them. A *prima facie* case of obviousness requires that the prior art reference (or references when combined) teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A.

[2] The Declaration of Anne Solveig Tønnesen dated May 27, 2005 is attached in the Evidence Appendix.

1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging patentability of that claim against the prior art."); MPEP §2143.03. Moreover, the prior art certainly does not teach, either alone or in combination, first and second picture storages which are organized as plurality of storage areas that periodically (or alternately and periodically) scanned.

Accordingly, Appellant submits that claim 13 and all claims depending therefrom should be allowed because there is no motivation to combine the references and the references fail to disclose all of the elements recited in the rejected claims.

Claim 17

Claim 17 recites that the first and second picture storages are scanned by first and second picture generators, which are coupled to the projectors. The Examiner contends that "a first liquid crystal panel (11) and a second liquid crystal panel (12) are associated with the first projector and second projector respectively as the 'first and second picture generator.'" (Final Office Action: page 8, line 3).

A *prima facie* case of obviousness requires that the prior art reference (or references when combined) teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging patentability of that claim against the prior art."); MPEP §2143.03.

As is explained in the specification of the present application the picture generator converts data from a storage format to picture signals for the projector. (page 7, line 20). According to Park '890 LCD's 11 and 12 form the images, which are projected through lenses 7, 8, 15, and 16 with light sources 17 and 18.

Therefore, the LCD's form part of the projector and do not convert from a storage format to the picture signal.

Accordingly, Appellant submits that claim 17 and all claims depending therefrom should be allowed because the references fail to disclose all of the elements recited in the rejected claims.

Claim 18

Claim 18 recites that the picture generators are able to scan their associated picture storage at a scanning rate different than an incoming rate of the picture signal.

A *prima facie* case of obviousness requires that the prior art reference (or references when combined) teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q. 2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970) ("All words in a claim must be considered in judging patentability of that claim against the prior art."); MPEP §2143.03.

Neither Park '890 nor Shikama '538 disclose scanning the picture storage at a scanning rate different than the incoming rate of incoming picture signal. The Examiner contends that "the scanning rate is based on the design of the liquid crystal display which could be different from the incoming rate of the image signals." (Final Office Action: page 8, line 11). Even assuming arguendo that a liquid crystal display could allow a different scan rate, that fact alone would not cause a scan rate different than the incoming rate of picture signals. It is axiomatic that the mere fact that the prior art structure could be modified does not make such a modification obvious unless the prior art *suggests the desirability of doing so*. *See In re Gordon*,

733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984); *In re Mills*, 916 F. 2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); MPEP § 2143.01.

Accordingly, Appellant submits that claim 18 should be allowed because the references fail to disclose all of the elements recited in the rejected claim; and there is nothing in the references to suggest modifying the reference as hypothesized by the examiner.

VIII. CONCLUSION

Based on the foregoing, Appellant submits that all claims 13 and 15 - 18 are allowable. Further, Appellant maintains that the Examiner has improperly rejected the appealed claims of this application and has improperly failed to enter allowance in this case. As argued above, the application discloses and claims an invention not fully and fairly anticipated or obviated by the applied references either alone or in combination. Therefore, Appellant respectfully requests that the Board reverse the Examiner's decision and grant allowance of these claims.

Respectfully submitted,

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CLAIMS APPENDIX

Claims 1-12 canceled.

13. (Previously Presented) A method for stereo projection of pictures, represented by incoming odd and even numbered picture signals, alternating cyclically between a picture intended for the right eye and a picture intended for the left eye, whereby first and, thereafter each odd numbered picture signal received, is transferred to a first projector, and whereby second and, thereafter each even numbered picture signal received, is transferred to a second projector, said picture signals for odd numbered pictures being decoded and stored in a first picture storage which is scanned periodically and projected by said first projector, and said picture signals for even numbered pictures being decoded and stored in a second picture storage which is scanned periodically and projected by said second projector and wherein said first picture storage and said second picture storage are each divided into a plurality of memory areas each said memory area capable of storing a picture and selectable for scanning of a stored picture or for storing a picture, and when one memory area in the first picture storage is selected for scanning by the first projector, a different memory area in the first picture storage is selected for storing, and when one memory area in the second picture storage is selected for scanning by the second projector, a different memory area in the second picture storage is selected for storing.

14. (Withdrawn) A method according to claim 13 whereby said first picture storage is organized as a plurality of first picture storage areas which are periodically and alternately scanned, and whereby said second picture storage is organized as a plurality of second picture storage areas which are periodically and alternately scanned.

15. (Previously Presented) A method according to claim 13 whereby the first and second projectors each project their associated right and left pictures at the same time.

16. (Previously Presented) A method according to claim 13 whereby the first projector only projects the first and, thereafter, each odd numbered picture received, and whereby the second projector only projects the second and, thereafter, each even numbered picture received.

17. (Previously Presented) A method according to claim 13 whereby the first picture storage is scanned by a first picture generator that is coupled to the first projector, and whereby the second picture storage is scanned by a second picture generator that is coupled to the second projector.

18. (Previously Presented) A method according to claim 17 whereby each of the first picture generator and the second picture generator is able to scan its associated picture storage at a scanning rate different than an incoming rate of the incoming picture signal.

19. (Canceled)

20. (Withdrawn) A method according to claim 19 wherein each of said left picture storage and said right picture storage is divided into a plurality of picture storage areas, each storing an associated picture.

21. (Withdrawn) A method according to claim 20 whereby the respective picture storage areas within left picture storage area and said right picture storage area are alternately scanned.

22. (Withdrawn) A method according to claim 21 wherein a left picture generator and a right picture generator are respectively connected between said left and right picture storages and said left and right projectors, and whereby each said

generator has an associated picture selector which reacts to a control signal to select one of the pictures within its associated picture storage and to transmit the selected picture to it associated projector.

23. (Withdrawn) A method according to claim 22 wherein a left decoder is connected to said left picture storage by a left area selector and a right decoder is connected to said right picture storage by a right area selector, and whereby said left area selector and a left said picture selector connect to different picture storage areas within the left picture storage and said right area selector and right said picture selector connect to different picture storage areas within the right picture storage.

24. (Withdrawn) A method according to claim 19 wherein a left picture generator and a right picture generator are respectively connected between said left and right picture storages and said left and right projectors, and whereby each said generator has an associated picture selector which reacts to a control signal to select one of the pictures within its associated picture storage and to transmit the selected picture to it associated projector.

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Withdrawn) A device according to claim 28 including a first picture storage coupled to said first decoder and a second picture storage coupled to said second decoder, each of said first and second picture storages divided into a plurality of picture storage areas for storing a respective picture from its associated decoder.

30. (Withdrawn) A device according to claim 29 including a first area selector connected between said first decoder and said first picture storage, and a second area selector connected between said second decoder and said second picture storage, each area selector responsive to a control signal to alternately connect its associated decoder to one its associated picture storage areas.

31. (Withdrawn) A device according to claim 29 wherein the first picture storage is scanned periodically by a first picture generator that is coupled to the first projector, and wherein the second picture storage is scanned periodically by a second picture generator that is coupled to the second projector.

32. (Withdrawn) A device according to claim 31 wherein each of the first picture generator and the second picture generator is able to scan its associated picture storage at a scanning rate different than an incoming rate of the incoming picture signal.

33. (Withdrawn) A device for stereo projection of pictures represented by an incoming picture signal which alternates cyclically between a right eye picture and a left eye picture, said device comprising a page selector adapted to transmit picture signals for a first and, thereafter, each odd numbered picture along a first path toward a first projector and to transmit picture signals for a second and, thereafter, each even numbered picture along a second path toward a second projector, wherein said even numbered pictures are not received by said first projector and said odd numbered pictures are not received by said second projector, and wherein said page selector is connected to a controller adapted to sense the incoming picture signal and recognize signal values or signal codes indicating new pictures and to alternately transmit the new pictures to said page selector.

34. (Withdrawn) A device according to claim 33 including a first picture storage for storing each odd numbered picture transmitted by said page selector, and a second picture storage for storing each odd numbered picture transmitted by said page selector.

35. (Withdrawn) A device according to claim 34 including a first picture generator coupled to the first projector for scanning said first picture storage, and a second picture generator coupled to the second projector for scanning said second picture storage.

36. (Withdrawn) A device according to claim 35 wherein each of the first picture generator and the second picture generator is able to scan its associated picture storage at a scanning rate different than an incoming rate of the incoming picture signal.

37. (Withdrawn) A device according to claim 35 wherein said first generator is coupled to said first picture storage by a first picture selector and said second generator is coupled to said second picture storage by a second picture selector, and including a first decoder connected to said first picture storage by a first area selector and a second decoder connected to said second picture storage by a second area selector.

38. (Withdrawn) A device according to claim 37 wherein each of said left picture storage and said right picture storage is divided into a plurality of picture storage areas, each storing an associated picture.

39. (Withdrawn) A device according to claim 38 wherein said first area selector and said first said picture selector connect to different picture storage areas within the left picture storage, and said right area selector and right said picture selector connect to different picture storage areas within the right picture storage.

40. (Withdrawn) A device for stereo projection of pictures represented by an incoming picture signal which alternates cyclically between a right eye picture intended for the right and a left eye picture intended for the left eye, said device comprising:

a. an area selector adapted to transmit each picture intended for the right eye and each picture intended for the left eye to a common picture storage which is divided into a plurality of alternating left and right picture storage areas;

b. a left projector connected to each left picture storage area by a left picture selector which is not connected to said right picture storage areas;

c. a right projector connected to each right picture storage area by a right picture selector which is not connected to said left picture storage areas; and

d. a controller adapted to sense the incoming picture signal and recognize signal values or signal codes indicating new pictures, said controller further adapted to transmit each new picture to said area selector and to generate a control signal to the area selector such that said area selector is caused to alternately transmit each left picture into an associated left picture storage area and each right picture into an associated right picture storage area.

41. (Withdrawn) A device according to claim 40 wherein said common picture storage is organized as a ring buffer.

EVIDENCE APPENDIX

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Joar Vaage
Appl. No.: 09/936,390
Filed: September 10, 2001
Docket No.: 1781
Conf. No. 3776
Title: ***A METHOD AND AN APPARATUS FOR STEREOPROJECTION OF PICTURES***
Art Unit: 2872
Examiner: Chang, Audrey Y

Action: ***DECLARATION OF ANNE SOLVEIG TØNNESEN UNDER 37 C.F.R. §1.132***
Date: May 27, 2005

To: Mail Stop Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Anne Solveig Tonnesen declares as follows:

1. My name is Anne Solveig Tonnesen and I am a Program Manager at Cyviz AS, located in Stavanger Norway, which is the owner of this application. I hold a Master of Science Degree in Physics from the University of Bergen. I am also in the progress of obtaining a master degree in management from the BI, Norwegian School of Management. I have completed 2/3 of my coursework (organizational psychology and organizational communication), and need a third course to complete that degree, which I anticipate completing by 2006. Attached to this declaration as Exhibit 1 is my curriculum vitae which explains my qualifications in greater detail.

2. Cyviz AS specializes in providing high-end visualization equipment for passive stereo and high resolution. As part of my job responsibilities with Cyviz AS I am intimately involved in the R&D for all projects, the company's patent portfolio, as well as process and quality management. I have also had extensive experience in optics technologies which I believe qualifies me to offer my comments with regard to the present application.

3. I have been asked to comment about certain US patent documents which have been cited against the company's pending patent application, Serial No. 09/936,390, which is bears the title "A METHOD AND AN APPARATUS FOR STEREOPROJECTION OF PICTURES". It is my understanding that the examiner handling the application at the USPTO has rejected each of the claims based on the assertion that the invention is obvious. More specifically, I am aware that a primary reference (US Patent No. 5,959,663 to Oba et al.) is being relied upon either alone or with the teachings from other references (US Patent No. 5,726,703 to Izawa et al. or US Patent No. 5,982,538 to Shikama et al.) to reject pending claims 1-12 which were presented in an earlier amendment.

4. I have reviewed the above patents, as well as the examiner's office action mailed on 30 November 2004 and the pending application, each in its entirety. While I have studied certain passages within these patents which have been particularly referred to by the examiner, my opinions nonetheless take into account each of the patent document(s) as a whole. I believe that my particular

knowledge, my background experience in areas relating to this invention, and my consideration of these patents qualifies me to offer the opinions in this declaration. Based on my review of these various materials, I respectfully disagree with many of the examiner's conclusions and offer the following observations in support of patentability.

5. I would like to begin by briefly discussing video imaging in general, as well as each of the above patents, as this will provide a framework for my opinions.

6. **STEREOSCOPY**: Stereoscopic imaging is used for the case where you see one image with the left eye and one image with the right eye and thus the brain triangulates the information to create a 3D experience which includes depth information. Monoscopic, on the other hand, is used for the case where both eyes see the same information or image and there is no depth information.

7. One of the standard stereoscopic video signal formats (referred to as a single signal format) can be described in the following way: In the single signal format a stream of alternating image frames are provided so that a first and every odd numbered image is intended for a first eye (e.g. the left eye), while a second and every following even numbered picture is intended for the second eye (e.g. the right eye). In parallel with the stream of alternating left and right images, there is a synchronization signal that provides appropriate timing.

8. The most common way of watching these kinds of stereo signals is by displaying the complete video signal, as is, showing every image frame on a

single display device and using active liquid crystal shutters to alternately block or open the corresponding eyes of the viewer, in unison with the synchronization signal.

9. The single signal format has some limitations. For example, the frame rate handling capability of the display may cause the frequency to be limited, which normally results in flickering. Flicker occurs because of limitations in the displays or the polarizing Liquid Crystal Shutter glasses. This can also be a limitation of the actual display technology being used.

10. Another stereoscopic video signal format (referred to as the dual signal format) has two separate signals -- one signal containing the left eye information and another signal containing the right eye information. The two video signals will then appear to be similar to a regular video signal, and can be viewed alone as a regular video signal. If you use both signals to get the stereoscopic effect, some time domain synchronization must be present.

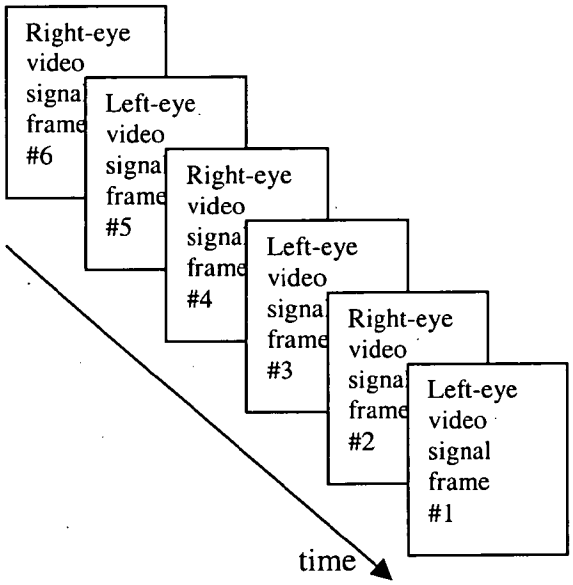
11. The table on the following page shows the type of incoming video signal(s) used in the various patents which have been cited by the examiner, as well as the present application.

Video signal	Display type	Patent/Patent App.
Regular 2D video (monoscopic)	2 projectors	Oba et al
Two separate streams	1 projector	Shikama et al
Video signal with alternating left and right eye information	2 projectors	Present Invention
Video signal with alternating left and right eye information	1 projector	Izawa et al[1]

12. I have also included below diagrammatic representation which illustrates the differences between incoming 2D signals and 3D signals.

Input video signals:

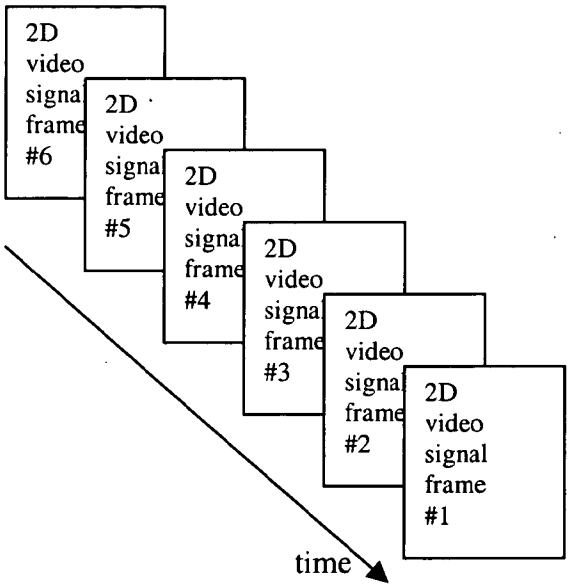
Stereoscopic image signal with alternate left and right eye images:



[1] Izawa et al also describes a setup with more than one projector, but as I will explain later, all the projectors individually show left-eye and right-eye images alternately.

Every second image frame is viewed from a slightly different angle corresponding to the different view from a left and a right eye.

Regular monoscopic video signal :



All the video signals are viewed from the same angle/position.

13. **U.S. PATENT NO. 5,959,663 TO OBA ET AL.** On the surface the Oba et al. device and that described in the present application may appear similar. Broadly speaking, each receives an incoming signal, does something with it, and sends signals to left and right projectors for the purpose of displaying stereoscopic images on a screen which can be viewed using spectacles with polarizing glasses to observe a 3D effect. However, in considering the two approaches more thoroughly, significant differences become apparent.

14. Oba et al. describes a device which receives regular 2D (monoscopic) video input signals, artificially makes a left and a right image signal using an operator setting or default values, and sends the constructed left and right image signals to a left and a right projector, respectively.[2] Thus, for each image frame received in standard 2D format, the Oba et al device creates two new image frames (i.e. pictures) -- one intended for the left eye and one intended for the right eye. This is accomplished by image processors 22L and 22R. This generation of the 2 new sets of signals is based on arithmetic calculations using spatial image transform matrices. This transformation process rotates and moves the individual pixel information within the original signal frames to new positions or addresses inside each individual frame. The result is a rearrangement of the pixels for each of the left and right eye display. This generates an artificially constructed stereoscopic effect when the new left-eye image and right-eye image are viewed simultaneously using appropriate viewing spectacles.

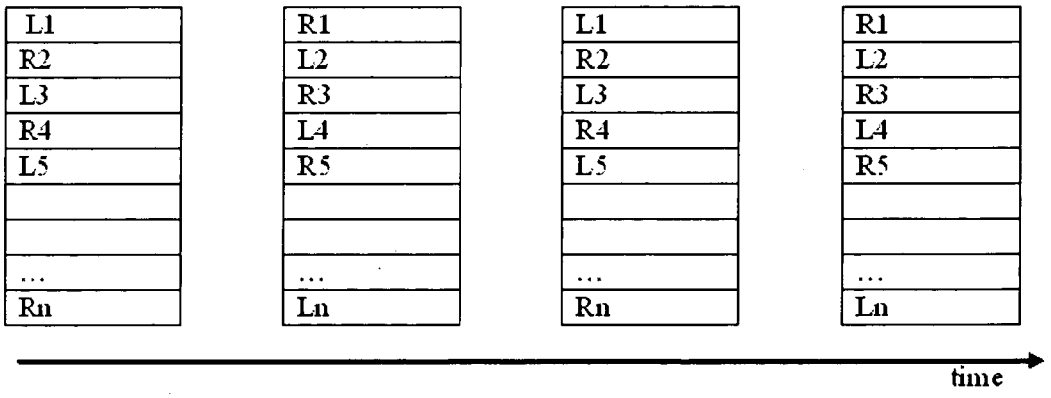
15. Importantly, Oba et al does not describe how to receive and sort an incoming, ready made 3D signal (i.e. one which alternates cyclically between left

[2] I consider these to be constructed 3D images, and not true 3D images since they are derived by adding information to the incoming 2D signal which was not originally there.

and right pictures). Rather, Oba et al. teaches a device which artificially fabricates a 3D format from a 2D video format.[3]

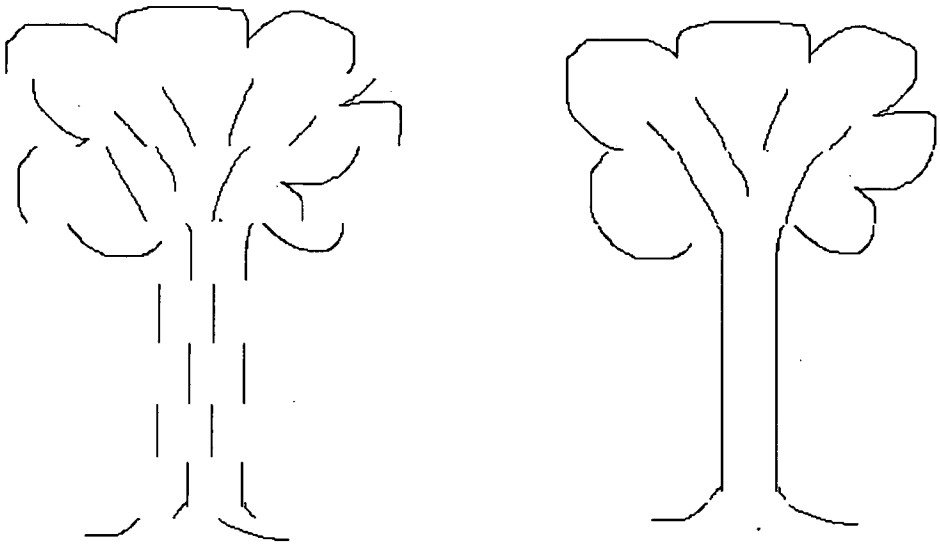
16. **U.S. PATENT NO. 5,982,538 TO SHIKAMA ET AL.** Without entering into a detailed analysis of the optical system described in Shikama et al, I will briefly describe how they treat the image signals.

17. A first and a second image signal comprise the input signals to the device containing image information intended for the left and the right eye, respectively. Each input image signal is stored in a respective frame memory. When the image is displayed on the light valve, odd numbered rasters are modulated by the first image signal and even numbered rasters are modulated by the second image signal, as illustrated below.



[3] As a general observation, it is difficult to add more information (e.g. depth) to an image beyond what is already in the original 2D signal data, and it can have an effect on the final quality of stereoscopic images which are generated according to this method.

18. In this way every displayed picture frame is a mix of the left and the right input signals. The resulting effect, as illustrated below, is that every picture frame displayed is interlaced with every second line or raster for the right or the left eye. The viewer will use polarized glasses so that the odd numbered lines are viewed with the left eye and the even numbered lines are viewed with the right eye.



19. The left image above is the image on the display or light valve, showing every second line or raster with left eye information and the other lines showing right eye information. The right image above is what the incoming picture signal for one of the frames look like. Using a corresponding polarization device to add polarization direction of the light according to the same rasters or lines, one can see a stereoscopic image using spectacles with corresponding polarizing filters.

20. Obviously, the resolution will be higher than the above representation indicates, but a potential drawback to this type of device is that, unless the frequency of the image generation is suitably increased, it could result in a loss of half of the image since every second line from the picture signal would be lost. Using LCD panels as suggested by Shikama et al, the frame rate does not appear capable of displaying new frames at the necessary speed to avoid loss of information.

21. It is my belief that the approach described in the Shikama et al patent can, for the most part, only be used inside display devices for light valve types which write the image in a raster-type manner. Examples of such devices are Liquid crystal displays (LCDs) or Cathode Ray Tubes (CRTs). Shikama's approach might also write the information on digital displays, but the optical systems belonging to these displays would be incompatible, or at least not of practical use with today's technology.

22. **U.S. PATENT NO. 5,726,703 TO IZAWA ET AL.**. This patent shows, for example in Fig. 20, how multiple projectors form a display system. The right projection device 50R and the left projection device 50L are secured to each other at adjacent side portions, thus forming a right part and a left part of a total

image with higher resolution, bigger display size or higher brightness values than a single projection device.[4]

23. Each projection device has an upper and a lower projection CRT unit, adding up to a total of four CRT projection units as shown in the 2 x 2 matrix of Fig. 20. Quoting from column 3, lines 16-20 of the reference: "***Each*** of the projection units has left/right stereoscopic image signal generator means for alternately generating RGB signals of a left-eye image signal and a right-eye image signal having a parallax at every field, ..." (emphasis added). Claim 8 of the patent states in part: "A stereoscopic image display system comprising: a plurality of projection units arranged vertically or horizontally, **each of the projection units** including left/right stereoscopic image signal generator means for **alternately generating** red, green, blue (RGB) signals of **a left-eye image signal and a right-eye image signal** having a parallax at every field ..." (emphasis added).

24. Having described the various references relied upon by the examiner in the office action, I will now address specific statements made by the examiner in which the reasons for rejecting the claims are given. Since each of the

[4] As argued in a previous communication to the examiner, projecting adjacent portions of an overall image using multiple projectors is distinctly different than dedicating one left projection device intended for a left eye and one right projection device intended for the right eye, which have their respective left and right images projected onto the same physical space.

examiner's statements which I address are contained within § 6 of the Office Action, I will refer to their location by page and paragraph number.

On p. 3, ¶ 2 of the Office Action the examiner states:

> "Oba et al teaches s *stereoscopic image generation* and *projection* method and apparatus, wherein the *an input video signal* (V_A), comprising picture signals intended for left eye and right eye is transferred to *a first and second projector* (23L and 23R, Figure 6), via a *first and second path.*"

In my opinion the Oba et al patent does not support such a statement. Throughout the descriptions in the Oba et al patent, the input signal is a standard 2D video signal, and <u>not</u> one which originally contains pictures intended for the left and the right eye separately. This generation of left-eye image signals and right-eye image signals is carried out inside the Oba et al apparatus using the image transform algorithms supplied, but they are certainly not present in the incoming video signal (V_A).

25. I believe a more accurate characterization than that offered by the examiner is that the incoming signal in Oba et al. has information which Oba et al. intends to ultimately be viewed as pictures by the left and right eyes. Importantly, though, the "pictures" are derived the incoming signal by processors 22L and 22R. Claim 1 of the present application recites that the incoming picture signal alternates between "pictures" intended for the left and right eyes. This

cannot be said of Oba since the actual pictures are generated downstream of the incoming signal and are not initially present within it.

26. Also on p. 3, ¶2 the examiner states:

> "The left eye picture signal and right eye picture signal are *processed* by left eye processor (22L) and right eye processor (22R) respectively which implicitly includes *decoding* the signal and *storing* the signal in *frame memory* (36L and 26R), that serves as the first *and second picture storage*."

27. I believe this statement is also incorrect. On the one hand, if the left and right picture signals were processed by processors 22L and 22R, this would imply that they exist before reaching the processors. As I mentioned above they are instead constructed within the processors 22L and 22R.

28. Moreover, the description in column 14 of Oba et al describes that processors 22L and 22R respectively generate left-eye and right-eye stereoscopic image output signals VL_{OUT} and VR_{OUT} from an input video signal V_A, an input key signal K_A, and an input background signal V_{BK}. Oba et al. thus teaches that the same incoming signals (V_A, K_A, and V_{BK}) are going to the two processors (22R and 22L) to generate the output right and left image signals. This can be readily seen in Fig. 6. In other words, the same 2D signals are sent to both processors together with a key signal to give the requested depth in the final image. Therefore, there are no left-eye and right-eye picture signals that are respectively processed by a left eye processor and a right eye processor.

29. The incoming 2D signal V_A is transformed by processor 22L to a calculated left portion of a new 3D image and the same incoming 2D signal V_A is transformed by processor 22R to a calculated right portion of the new 3D image. Hence the incoming 2D signal is generated into two new signals and, thus, there is no decoding which takes place as claimed in the current application. The resulting left-eye picture signal frames and right-eye signal frames are then temporarily stored in frame memories. In my experience, temporal storing of image signals will always occur in these types of devices.

30. In addition to the above, another difference between the Oba et al. device and that described in the present application is that, in Oba et al., the path from the frame memory to the projector is longer and the image is further processed on its path to the associated projector. The specific procedure for further processing of the image is described at column 15, lines 21-25 where Oba et al. states: "Image data VL_1 and VR_1 read out from the frame memories 36L and 36R of the left-eye and the right-eye processors 22L and 22R are interpolated at video signal interpolation circuits 40L and 40R, and then are supplied to the combiners 41L and 41R as read-out video signal VL_2 and VR_2." Then, the path to obtain read-out key signals KL_2 and KR_2 (*an apparent typing error in the patent at lines 31-32 where read-out video signals are indicated instead*) from the key data KL_1 and KL_2 is described. Finally, the equations to combine the input background signal V_{BK}, the read-out key signals KL_2 and KR_2 and the read-out

video signals VL_2 and VR_2 to the final stereoscopic output signals VL_{OUT} and VR_{OUT} are given in equations 90 and 91. From this description it is apparent that the frame memories described in Oba et al store only part of the image information for each incoming frame, not the complete picture frames delivered to the projectors.

31. On p. 3, ¶3 the examiner states:

> "This reference [Oba et al.] has met all the of the claims. However it does not teach explicitly that the video signal is *alternating* cyclically between the left-eye picture and the right-eye picture signals. However it is implicitly true that the left-eye signal and the right-eye picture signal are *separately processed*, which with regard to claim 2, this implies a *page selector is included* to allow the left eye picture signals and the right eye picture signals being transmitted via a first and a second path to the left eye and right eye projectors."

32. I respectfully disagree with this statement, as well. As stated above, since the input signal in the Oba et al patent is a standard 2D video signal there are no alternating left eye image signals and right eye image signals in the input video signal that can be selected. Therefore, since there is no cycling which occurs, there is no existence of (or need for) a page selector. More particularly, since the purpose of a page selector in the present invention is to separate out the left and right images within the incoming 3D signal, the incorporation of such a feature into the device of Oba et al. would be pointless since there are no left and right images that need to be separated in the first place.

33. However, assuming arguendo that one did include a page selector into the Oba et al. device, it would parse the incoming 2D signal by separating the even and odd frames, which would then be sent to separate branches. Doing so, however, would disrupt the timing sequence within processors 22L and 22R and cause the left and right projectors to operate at ½ the frequency of the incoming signal. Also, the projectors would no longer project their images simultaneously.[5] To the viewer this might appear as images which flicker or become incoherent and unintelligible. In any event, the result would be images which are of lesser quality than intended.

34. With regard to the Izawa et al. reference, the examiner maintains on p. 3, ¶3 that it is very common to have input video signal with alternating left eye and right eye pictures which are respectively transmitted to left and right projection devices. Applicant does not necessarily disagree with this characterization. The examiner then goes on to state on the following page:

> "**Izawa** et al teaches that a *changeover circuit* (2, Figure 25) can be used to *select* the left-eye or right-eye image signals (please see column 1, lines 20-23). (Noted the image signals from the image generator are processed before it become final transform image for projection, Figure 3). It would then have been either implicitly true that the left eye picture signals and right eye picture signals are input *alternatively* or it would have been obvious to one skilled in the art to apply the teachings of **Izawa** et al

[5] It is important to note that Oba et al. specifically intends to project the left and right images simultaneously. This can be readily appreciated in Fig. 6 which shows the simultaneous branching of the same incoming 2D signal to the left and right channels.

to modify the system to do so for the benefit of allowing the left eye and right eye picture signals being input in an easy manner."

35. Izawa would select the even or odd images to transmit the next image onto the same path regardless of being odd or even. The purpose of this selection is for the timing to be accurate towards the LC shutter spectacles used to watch the image. As stated above, though, it is certainly not the case (either explicitly or implicitly) that Oba et al. utilizes a 3D incoming video signal. Thus, regardless of the separate teaching in Izawa et al., there would be no reason to incorporate the Izawa et al. teachings into Oba et al. since they relate to the processing of completely different types of input signals.

36. The examiner states at p. 3, ¶1:

"Oba et al teaches that the image data representing the input video signal is written in and its read-out address is specified corresponding to the *raster scan address* on the screen which then allows the *generation* of the left eye and right eye final transform images (V5L and V5R) be transferred to the left eye and right eye projectors (23L and 23R) and be projected on the screen (24) at the *same time*, (please see figures 6-7, column 14)."

37. For each output pixel, the Oba et al. process calculates an address to a pixel from the input image storage. The result is a rearrangement of the pixels for each of the left and right eye display.

38. The examiner goes on to state at p. 4, ¶2:

"Oba et al teaches that the final transformation images (V5L and V5R) that are being transmitted to the projectors have a read out address that is corresponding to the **raster scan address** on the screen. This implies that periodically scanning is used to produce the image signals for projection."

39. Unlike Oba et al., the present invention does not process pixels individually, but rather pages/frames. As to the contention by the examiner that Oba et al. implicitly teaches periodic scanning to produce the image signals, the only references I can find which relate to a periodic event in the Oba et al patent pertains to the sequential supply of read-out addresses to the read-out generation means. These references may be found at Column 14, line 60 through Column 15, line 6; Column 15, lines 22-46; and claims 5 & 13. In my opinion, these passages do not necessarily imply periodic scanning.

40. Also on p.4 ¶2 the examiner states:

"It is also very well known in the art to use scanning unit to scan the frame memory of the display device to generate the image. **Shikama** et al in the same field of endeavor *explicitly* teaches a light valve for an image projector has right image frame memory and left image frame memory for storing the right and left image field respectively wherein a *scanning unit* (40, Figure 3) is used to *periodically scan* the memory frames to generate the right and left image signals for projections. It would then have been obvious to one skilled in the art to apply the explicit teachings of **Shikama** et al to provide image memory frames for left eye image and right eye image respectively and scanning circuit for scanning the frame memory in order to produce the image signals for projection efficiently."

41. Regarding the point raised by the examiner that Shikama et al teaches a periodic scan that is used to generate the right and left image signals for

projection, Shikama et al describes a different way of scanning than the current application. Shikama et al teaches to scan one raster[6] (in the case of an LCD light valve described in the patent, one line of picture information) at a time from the left and the right frame memory, respectively, thus generating a new frame or image written to the light valves consisting of left eye and right eye information interlaced.

42. In the present application, the picture generator scans between the first and the second picture area inside the picture storages (i.e. frame memories) 5 & 6 to select which picture or frame to transmit to the attached projector. This happens in both the left and the right image channels. More particularly, the left storage area is scanned by the left image generator for a complete frame to be directly displayed in its entirety on the left projector, and the right storage area is scanned to retrieve another complete image frame to be displayed on the right projector (see Fig.1 of the present application). In this case the paths are completely separated -- all the information in the left storage area is displayed on the left projection device and all the image information in the right storage area is displayed on the right projection device.

---

[6] One raster is the amount of information written to the display at a time, so that you scan raster by raster until the complete frame has been displayed and then you start again to write the next frame.

43. The examiner goes on to state at pp. 4-5:

> "With regard to claims 5-6 and 10-11, Oba et al teaches that the left eye transform image and right eye transform image (V5L and V5R) are each generated by a first and second image processors (22L and 22R) and the processors are coupled to the left eye and right eye projectors (23L and 23R) respectively. These references do not teach explicitly that if the scanning rate is different than the incoming rate of the picture signal however since these picture signals are processed first by the processor, the rate could be different from the incoming rate depending on the processing rate."

44. It appears, then, that the examiner is maintaining that, in Oba et al., the projected frame rate might be different than the incoming frame rate due, for example, to processing delays. However, even if this were the case, I do not see a teaching in Oba et al. that their device has the ability to correct this. In fact, Oba et al. states that the timing is the same through the entire system. For example, Oba states the following beginning at column 2, line 61 (emphasis added):

> "Further, the source video signal is **moved continuously** by frames in the three-dimensional space based on the operator's operation, the right-eye video signal and the left-eye video signal **in real time** interlocking **with the continuous movement of the source video signal.**
>
> Further, the simultaneous image transform process based on one input video signal at the time of generating the left-eye and right-eye images **removes such complicated process as re-synchronization** of the left-eye and right-eye images, which makes it possible to generate much better stereoscopic image. Accordingly, it is possible to display the left-eye video signal and the right-eye video signal synchronizing with each other all the time on the screen."

Also in column 17 beginning at line 26 the timing is explained, where Oba et al discusses that the processing is done simultaneously in both channels. The reference, however, does not appear to comment on whether the rates change or if there is any way to correct changes if they were to occur.

45. In fact, since the two frame memories in Oba et al. do not have more than one storage area (unlike the present invention) it follows that Oba et al. reads and processes at the same speed as the incoming signal rate because, otherwise, the signals would become mixed.

I, the undersigned, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, declares that the facts set forth in this declaration are true, all statements made of my own knowledge are true, and all statements made on information and belief are believed to be true.

Further declarant sayeth not.

Dated: 27 MAY 2005 By: Anne Solveig Tonnesen

Anne Solveig Tonnesen

Curriculum Vitae

PERSONALIA

Name: Anne Solveig Tønnesen
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Date of birth: 16. September 1971

WORK EXPERIENCE:

Employer	*Time*	*Title*
Cyviz AS:		
	Mar 05 – Present	Program Manager
InFocus Corporation:		
	Dec 03 – Feb 05	Optics Manger / Chief Eng.
	Nov 01 – Dec 03	Optics Manager
	Apr 01 – Nov 01	Project Manager
	Apr 96 – Mar 01	Optics Designer
University of Bergen:		
	Jan 96 – Apr 96	Consultant, Faculty of Mathematics and Natural Science
	Fall 93, 94 & 95	Undergraduate Teacher, Physics Institute
	Spring 93, Fall 93	Undergraduate Teacher, Mathematics Institute
Philips Petroleum:		
	92 & 93	Summer intern, Reserves & Planning
	89, 90 &91	Summer/Winter intern, Different dept's

EDUCATION:

Time	*Duration*	*Description*	*Institution*
04 – 05	30 points (½ year)	Communication in Organizations	BI, Norwegian School of Management
02 – 03	30 points (½ year)	Organizational Psychology	BI, Norwegian School of Management
90 – 95	5 years	Master of Science, Physics	University of Bergen

PUBLICATIONS:

Anne Solveig Tønnesen, Jakob J. Stamnes and Torolf Wedberg: *Three-Dimensional Optical Diffraction Tomography by Two-Dimensional Sectioning.* Oral presentation, Optics & Optoelectronics Conference, 5.-8. September 1994 in York, UK

Anne Solveig Tønnesen, Jakob J. Stamnes and Torolf Wedberg: *Three-Dimensional Optical Diffraction Tomography by Two- Dimensional Sectioning.* Poster presentation, Norsk Elektro-optikkmøte, 23.-26. April 1995, Ustaoset, Norway

LANGUAGE SKILLS

Norwegian	Native. Fluent, written and spoken (both Bokmål and Nynorsk)
English	Fluent, written and spoken
German	Good spoken, Fair written
Danish/ Swedish	Good understanding

DESCRIPTION OF KEY CHARACTERISTICS

My experience includes product development, program management, supplier selections, process development, people management and training of manufacturing, quality engineers and marketing people in addition to optical design. I have an excellent technical understanding and have demonstrated good communication skills in an international environment. I am analytical of nature and perform well under pressure. I am open, outgoing and dedicated, and I find it easy to be enthusiastic about my work when I am busy and things are happening fast.

Work Experience

Cyviz AS – Program Manager

Cyviz AS is a specialised provider of high-end visualization equipment for passive stereo and high resolution. My responsibility includes:

- R&D Roadmap and technical direction
- R&D Management including personnel, resource allocation and budgets
- Project Management for all projects
- Supplier selection
- Patent portfolio
- Process and quality management

InFocus Corporation

InFocus Corporation –Optics Manager / Chief Engineer
The Research & Development Department at InFocus was organized as a matrix organization spanning over two departments (Wilsonville, Oregon and Fredrikstad, Norway), and I was responsible for a group of engineers across the different market segments and both development sites. My responsibility included the following tasks:

- Main responsibility for strategy and technical direction for lamps, screens, displays, optical components and systems.
- Main responsible for technical communication with suppliers inside the above mentioned areas.
- Responsible for the optics development inside InFocus Corporation, continuous functional development and training for optical designers and engineers.
- Resource management of optical designers and engineers
- Participating in cross-functional team with supply chain management and quality engineering for strategic selection of suppliers and partners and for qualifying new suppliers.
- Participation in product definition phase for all new products across all the product families and overall roadmap planning for InFocus.
- Development and coordination of routines and development processes for documentation, design and working with co-development partners.
- Responsible for advanced development and research programs with optical engineering for future programs

I was responsible from R&D for a project to determine the value of the intellectual property and knowledge base for R&D in Norway. This work was done in cooperation with Ernst &Young in the timeframe Jan 04 – April 04.

InFocus AS – Optics Manager (Norway)
My position as Optics Manager included the following tasks:

- Personnel and budget responsibility for the optics group, including hiring and training of new engineers.
- Responsible for resource management according to programs and coordination with other departments.
- Development and implementation of routines for documentation and process control.
- Participating in cross-functional team with supply chain management and quality engineering for strategic selection of suppliers and partners and for qualifying new suppliers.

- Responsible for strategy and technical direction for lamps, screens, LCD displays, optical components and systems.
- Main responsible for technical communication with suppliers inside the above mentioned areas.
- Overall program management responsibility for optical products and optical architectures for products developed in Fredrikstad.

We had about 1 year without an R&D Director in Norway and during this time I was participating in the extended leadership group for InFocus Corporation and member of the Management group for Fredrikstad Site (Jun 02 – Feb 03).

InFocus AS – Project Manager
I was the project manager for development and introduction of the projector ASK C300 (also marketed as Proxima DP8000 and InFocus LP790). The work consisted of coordination of activities for different internal functional groups and individual engineers, towards other departments as product marketing in the US, production, sales and external suppliers.

ASK/Proxima (now InFocus) – Optics Designer
The R&D department was rather small and I reported directly to the R&D Director. I was responsible for development and design of optics for various data- and video-projectors; the last one was ASK M3/Proxima X350. As the company was building up and the industry changed rapidly, I was deeply involved in building up the R&D department, the supplier base and the strategic direction of the company and the products. The work included the following tasks:

- Definition and design of optical systems
- Testing of prototypes and creation of manufacturing documentation and training for manufacturing staff.
- Participating in cross-functional team with supply chain management and quality engineering for strategic selection of suppliers and partners and for qualifying new suppliers.
- Made studies and suggested strategy for display technologies for future use.
- Analysis of competing products
- Problem solving connected to quality issues in manufacturing
- Give lectures and training for marketing, sales and manufacturing staff.

Universitetet i Bergen – Førstekonsulent/Consultant
The work at University of Bergen included general casework, updating and maintenance of database, and student counseling.

Education

Management Classes from BI, Norwegian School of Management
I have completed two thirds of a program to achieve a Master of Management degree at BI, Norwegian School of Management. Topics studied include organizational psychology, communication, management skills etc.

Master degree from the University of Bergen
The education from University of Bergen had duration of 5 years and consisted of the following topics: physics, mathematics, chemistry and numerical analysis. The thesis consisted of 1.5 full year research where I programmed theoretical models and compared different approximations to the exact method on the subject electromagnetic and acoustic wave propagation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Joar Vaage
Appl. No.:	09/936,390
Filed:	September 10, 2001
Docket No.:	1781
Conf. No.	3776
Title:	*A METHOD AND AN APPARATUS FOR STEREOPROJECTION OF PICTURES*
Art Unit:	2872
Examiner:	Chang, Audrey Y

Action: ***DECLARATION OF ANNE SOLVEIG TØNNESEN UNDER 37 C.F.R. §1.132***

Date: December 5, 2005

To: Mail Stop Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Anne Solveig Tonnesen declares as follows:

1. My name is Anne Solveig Tonnesen and I am a Program Manager at Cyviz AS, located in Stavanger Norway, which is the owner of this application. This is my second declaration in this matter.

2. I have been asked to comment about certain US patent documents which have been newly cited against the company's pending patent application, Serial No. 09/936,390, which is bears the title "A METHOD AND AN APPARATUS FOR STEREOPROJECTION OF PICTURES". It is my understanding that the Examiner handling the application at the USPTO has rejected each of the pending claims based on the assertion that the invention is obvious. More specifically, I am aware that one reference (US Patent No. 6,522,351 to Park) is being relied upon either alone or with the certain teach teachings from another reference (US Patent No. 5,416,510 to Lipton et al) to reject pending claims 13, and 15-19. I also understand that the reference to Lipton et al is alone used by the Examiner handling this application in support of her position that pending claims 25-29 are obvious.

3. I have reviewed the above patents, as well as the Examiner's most recent office action mailed on 5 August 2005 and the pending application, each in its entirety. As stated in my previous declaration, I believe that my particular knowledge, my background experience in areas relating to this invention, and my consideration of these patents qualifies me to offer the opinions in this declaration. Based on my review of these various materials, I respectfully disagree with many of the Examiner's conclusions and offer the following observations in support of patentability.

4. As before, I would like to begin by briefly discussing pertinent aspects video imaging, as well as each of the above patents, as this will provide a framework for my opinions.

5. **Video signals**: One of the standard stereoscopic video signal formats can be described as a stream of alternating image frames, so that a first and every odd numbered image is intended for a first eye (e.g. the left eye) and a second and every following even numbered picture is intended for the second eye (e.g., the right eye). In parallel with the stream of alternating left and right images, there is a synchronization signal that provides timing.

6. Stereoscopic imaging is used for the case where you see one image with the left eye and one image with the right eye and thus the brain triangulates the information to create a 3D experience which includes depth information.[1] The most common way of watching this type of stereo signals is by displaying the complete video signal as is, showing every image frame on a single display device and use active liquid crystal shutters to alternately block or open the corresponding eyes, synchronized with the synchronization signal.

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[1] Monoscopic imaging, on the other hand, is used for the case where both eyes see the same information or image and there is no depth information.

7. This technique has some limitations, one being that the frame rate handling capability of the display may cause the frequency to be limited and flicker normally occurs. Flicker can occur because of the actual display technology being used, whether a result of the displays themselves, or the polarizing Liquid Crystal Shutter glasses.

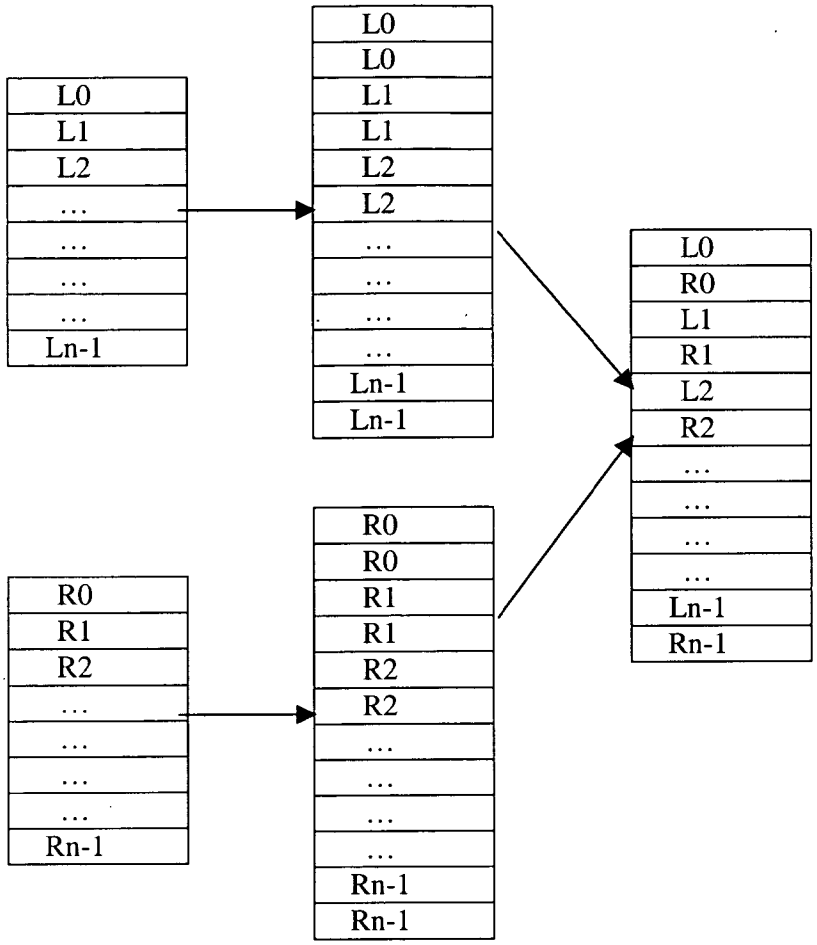
8. Another stereoscopic video signal format is to have two separate signals, one signal containing the left eye information and one signal containing the right eye information. The two video signals will then appear to be similar to a regular video signal, and can be viewed alone as a regular video signal. If you use both signals to get the stereoscopic effect, some time domain synchronization must be present.

9. This table below shows the types of stereoscopic video signal formats used in the present invention, as well as the various patents references which have been (or currently are) used reject claims of our application:

Video signal	**Display type**	**Patent**
Regular video (monoscopic)	2 projectors	Oba et al
Two separate streams	1 projector	Shikama et al Park
Two separate streams	2 projectors	Lipton et al
Two separate streams combined into 1 stream (intermediate field sequential/side-by-side format converted to a multiplexed signal)	1 projector	Lipton et al
Video signal with left and right eye information alternately	2 projectors	The present Invention
Video signal with left and right eye information alternately	1 projector*	Izawa et al

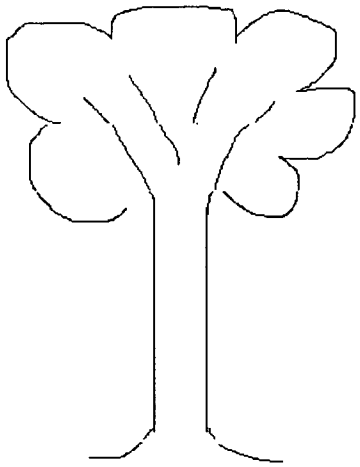
10. **U.S. Patent No. 6,522,351 to Park.** In Park there are two input camera signals, one representing the output of a left camera and one representing the output from the right camera. These two input signals are combined into one

signal as represented in the following figure, which is in accord with FIG. 5 of Park:

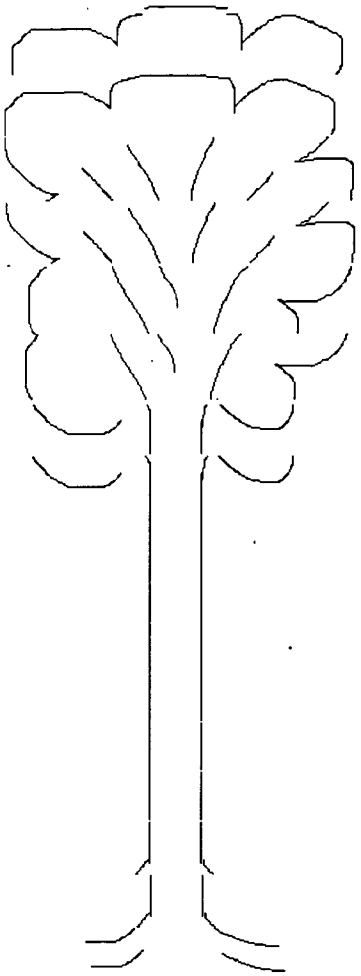


This treatment of the image signals can be illustrated by the following images:

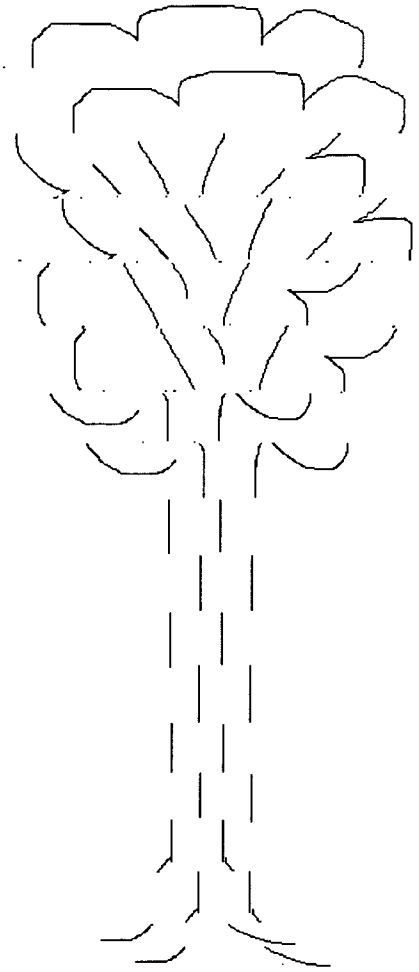
Left or right image:



Converting the image at double frequency (scanning each line twice as described in column 3, lines 39-48 in 6,522,351 Park) gives the following image:



The multiplexing section combines every second line from the left and the right image signal:



This combined image consists of all the information from both the left eye signal and the right eye signal.

11. The combined signal is then displayed with different colors to be viewed using glasses as described in US patent 5,260,773 [See Park at column 2, lines 29-32] with different color bands for the left and the right eye, so that the left eye only sees the part of the image intended for the left eye, and the right eye only sees the part of the image intended for the right eye.

12. The Examiner states on Page 5 ¶ 6. :

> **Park** teaches a method and device for stereo projection of pictures of an object (10, Figures 2-4), wherein picture signals of the object that are intended for left eye and for right eye respectively are formed and received by left and right video cameras and left and right receiving sections (100, and 110). Park teaches that the left eye and right picture signals from the cameras are converted to left eye and right eye television image signals, (such as 402 and 404 in Figure 5), and the left and right receiving sections *converts* the left and right televisions signals to left eye and right eye image signals, which means some sort of "decoding" function is performed. It is also implicitly true that certain picture storages for the left and right image signals are needed for storing the left and right eye image signals such that *repeated scanning* or periodical scanning the storages with the left and right eye image signals is performed, (double scanning sections 122 and 124, or 212 and 214 or 312 and 314, in Figures 2-4), to generate the double scanned image signals which are consequently transmitted to the projector for projection.

13. I wish to point out that repeated scanning in Park is described as scanning each horizontal line twice creating an intermediate picture that is not suitable for projection. The repeated scanning is followed by an alternating selection of a

horizontal line from the intermediate left and right double-scanned image signals to create a multiplexed image.[2]

14. The Examiner goes on to state with respect to Park:

> This reference has met all the limitation of the claims with the exception that it does not teach explicitly that the incoming left and right eye pictures are formed in cyclically format with odd and even number pictures and with odd numbered pictures being transmitted to a first projector and the even numbered pictures being transmitted to a second projector.

15. I wish to emphasize that there are fundamental differences between the incoming picture signals in Park and the present invention which seem to be glossed over by the Examiner. In the case of Park there are two cameras filming a left eye signal and a right eye signal, whereas in our invention the incoming picture signal contains both the left and right eye picture signals in one path, organized so that every odd numbered picture is intended for the left eye and the even numbered picture is intended for the right eye. The splitting or sorting of the incoming signal into two different paths is not discussed in Park. The resulting stereoimage is displayed on one projector in Park, with every second line intended for the left or the right eye, whereas in our invention the image is shown on two projectors.

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[2] I wish to also point out that there appears to be a discrepancy between the description of Fig. 5 (column 3, lines 60-65) and synthesized image signal 420 which is represented in the Figure. The text states that the synthesized image signal 420 has n image lines, whereas the figure indicates 2n horizontal lines. According to the description of method being used, the figure seems to be the correct version, suggesting 2n horizontal lines and no loss of image information. With only n lines, half of the lines from the left and right eye image signals would be lost, and the double scanning described would be of no benefit. Additionally, if the resulting image only has n lines, then the method would be similar to that described by Shikama et al..

16. The Examiner continues on to state:

> However Park does teach explicitly that the left eye picture and the right eye picture are *separated* stored, decoded and scanned, whether to make them coming in cyclical form or not does not differentiate the method of projection of the left and right eye stereoscopic image of the object.

17. The Examiner may be correct to assume that Park teaches the left eye pictures and the right eye pictures to be separately stored, but they are not separated and then separately stored, as in our invention. Before a decoding and storage takes place in our invention, the left eye pictures are separated from the right eye pictures and transferred to different picture storages. These pictures are then projected so that what is stored is what is projected. In Park, on the other hand, storage is presumably accomplished by the receiving sections 112 and 114 in the embodiment of Fig. 2. The receiving circuit generates and stores the L and R image signals which are transformed by the double scanning circuit before projection. (Fig. 5 and Col. 3, lines 50-60) Thus, what goes in is different than what comes out. The Examiner states that Park "does teach explicitly that the left eye picture and the right eye pictures are separated, stored, decoded and scanned . . . " However, since there are 2 cameras in Park, there is no need to decode at this point to separate out the left from the right image signals.

18. Park's scanning is also different than the present invention. Park describes a double scanning of each horizontal line inside the image to double the number of lines in the pictures. After this has happened both for the left eye image and the right

eye image, there is a multiplexing section which alternately selects a line from the left and right double-scanned image signals to produce a multiplexed double-scanned image signal.

19. In contrast, the scanning performed in our invention is performed in the left and right channels, respectively, and the periodic scanning refers to areas scanned inside the left or right picture storage, and includes scanning complete picture frames.

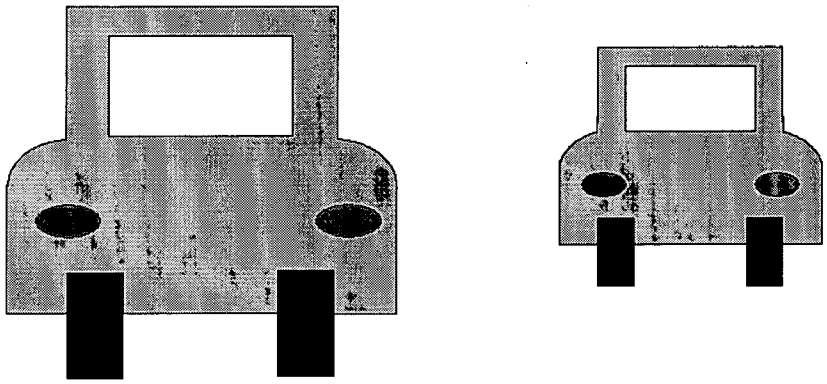
20. The Examiner goes on to state:

> One skilled in the art certainly can make the cameras (102 and 104) take the left and right eye pictures of the object in a time sequential manner in order for the odd numbers of the pictures representing the left eye pictures and even number of the pictures representing right eye picture for the benefit of reducing the number of the incoming pictures needed for achieving the projection.

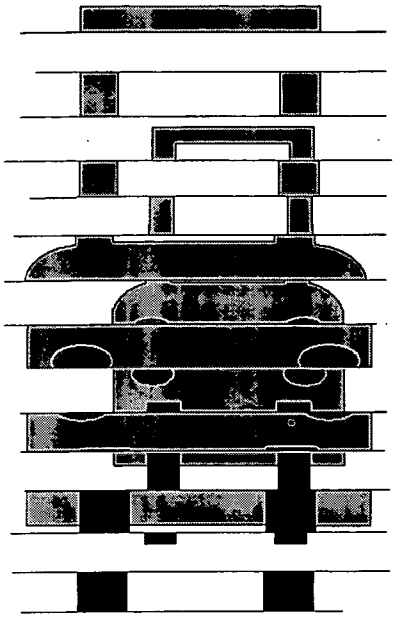
21. If we do as the Examiner suggests – that is, make the cameras (102 and 104) take the left and right eye pictures of the object in time sequential manner in order for the odd numbers of the pictures representing the left eye pictures and even number of the pictures representing right eye picture for the benefit of reducing the number of the incoming pictures needed for achieving the projection, then we would receive an unfavorable result using the method of Park. As the two picture signals are combined and multiplexed so that the projected image consists of timed information with every second line from the left image signal and the right image signal, we would end up with a picture projected at the same time, that was taken at different times.

22. To illustrate visually, ff we consider a sequence of a car driving away from us. Then the first image may look like the big car on the left, and the second image will look like the smaller car on the right

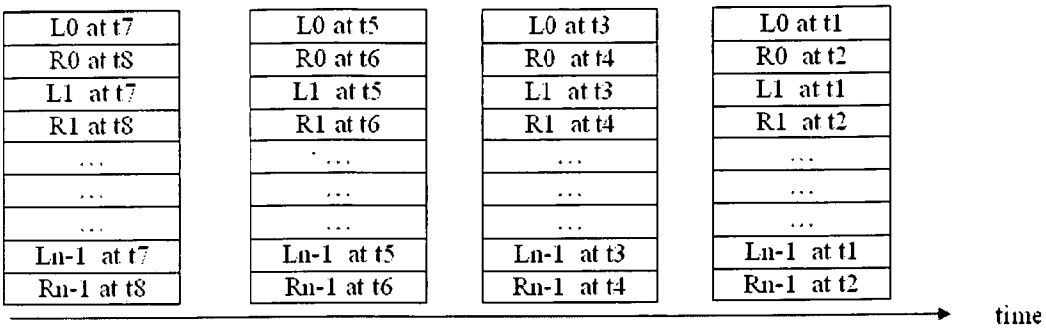
side.



23. If we now apply the approach suggested from the examiner and run the signal through using the method described in Park, the resulting image would look like this:

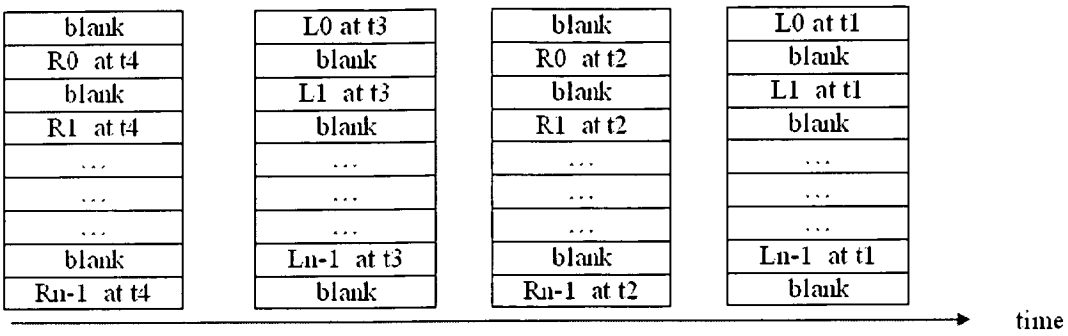


24. As we can see, every second line of picture information is taken from the left camera and the right camera, but the pictures at taken at different times, giving the car time to move further away in the case of the right camera (second picture). As can be clearly understood from this image, the method of Park does not work properly with this approach. You can also see a corresponding schematic view of the combined information in the next figure, where the notions t0, t1 etc. indicate pictures taken at different times. The odd numbered pictures will be pictures at t1, t3, t5, t7 etc and the even numbered pictures will be pictures t2, t4, t6, t8 etc.



25. It is, therefore, my opinion that sending the information from the two cameras in a time sequential manner into the device as taught by Park, we would not get a sensible result.

26. Alternatively, if a picture is only sent from the left camera at t1 and a picture from the right camera at t2, and this continues in a time sequential manner, then the result could in principle become a time sequential video signal output using the method described in Park. However, such a procedure would be unnecessary complicated because Park's use of double scanning would greatly reduce picture quality since every second line in the resulting image would be blank as shown below.



27. Using this method will reduce the number of incoming pictures, but it will also eliminate the need for the processing described in Park since there would be no need for scanning every second line to create an image with every second line from each picture frame, which I believe is important to Park's invention. Basically Park's invention would be reduced to an active stereosystem, with half the line resolution using this method.

28. In the office action, the Examiner also states:

> Park teaches that the left and right images are alternately transmitted (130, Figure 2) to the projection device, but it does not teach explicitly in this embodiment to use two projectors one for projecting the left eye picture image signals one for projecting right eye image signals.

I disagree. Actually, Park teaches that the left and right images are multiplexed and displayed interlaced on the projector, meaning that every second line contains either the left eye image information or the right eye image information. This is simply not the same as alternately transmitting the images.

29. The Examiner also states:

> Park however teaches it is known in the art to use two projectors for such stereo projection, (please see fig. 1). Lipton et al in the same field of endeavor teaches explicitly that left eye and right eye pictures of an object obtained by a pair of cameras (120 and 121, Fig. 1C) can be transmitted to right and left projectors (404 and 403, Fig. 4) respectively via recorder and display controller to make the right pictures being projected by the right projector and the left pictures being projected buy the left projector for the benefit of using a pair of projectors that allows simultaneous projections of the left and right eye pictures without time delay.

I do not disagree with this statement.

30. The Examiner continues:

> With regard to claim 17, the left double scanning section and the right double scanning section taught by Park serve as the first and second picture generator.

The left and right double scanning sections taught by Park and the picture generators in our inventions have different functions, so I believe it is improper for the Examiner to consider Park's double scanning sections to be equivalent to our picture generators. The double scanning sections in Park duplicate each horizontal line, but our picture generators scan periodically the different areas in the picture storage for complete picture frames to send the resulting image to the respective projectors. In addition, Park's double scanning circuits are not coupled to projectors, but instead to the multiplexing section 130. Therefore, the result of Park's double scanning sections is to create an intermediate images which are not suitable for direct projection, where the results of our picture generators are ready for projection.

31. The Examiner also states:

> With regard to claim 18, the double scanning section allows scanning of the image signals at a rate different from the incoming rate of the incoming picture signal.

I also do not disagree with this statement by the Examiner.

32. In section 7 of the Office Action the Examiner states:

> Lipton et al teaches a device for stereo projection of pictures having a pair of cameras (120 and 121, fig 1C) for producing left eye picture intended for left eye and right eye picture intended for right eye and the device further comprises recorder and display controller (401 and 402, fig 4) for selecting the left eye picture signal and directs it via a first optical path to a left projector and for selecting the right eye picture signal and directs it via a second optical path to a right projector for stereoscopic projection. This implies that display controller must include a certain page selector for selecting the left eye and right eye picture signals from the recorder.

33. **U.S. Patent No. 5,416,510 to Lipton et al.** According to Lipton et al's explanation of the preferred embodiments in column 8 lines 30 onwards the two signals are stored in memory and operated on topologically to produce a multiplexed signal which would have the appearance as shown in Lipton et al's Fig.2 if displayed on a conventional monitor, or directly onto a standard projector. Figure 2 shows a multiplexed image where the left eye and right eye pictures are stored as adjacent images within one picture frame (side-by-side format). The separation of the images into a left and a right path would therefore be a decoupling and demultiplexing rather than a mere page selection process which is performed in our invention. The description of Lipton et al's Fig. 3 talks about making the side-by-side format into a time sequential format to be displayed on a single projector. The description of Fig. 4

as mentioned by the Examiner mentions how the side-by-side format is separated into a left and a right image signal by the display controller 402. The display controller can not select complete frames, as each frame consist of both left eye and right eye information, hence it can not work as a page selector.

34. Finally, the Examiner states with respect to Lipton et al.:

> This reference has met all the limitations of the claims. It however does not teach explicitly that the page selector has a control unit adapted to sense the incoming left and right picture signals. But such control unit is either implicitly included for making the right eye and left eye picture signal *properly* being selected and directed to the respective projectors respectively or it is an obvious modification to one skilled in the art to *ensure* the selection and the transmission of the picture signals to the proper projectors be proper for achieving the stereoscopic image display.

As discussed above, since Lipton et al describes a different method in which two signals are operated on topologically to produce a multiplexed signal, there is no need for a page selector. Since there is no page selector in Lipton et al., it follows that there is no control unit assigned to it.

I, the undersigned, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, declares that the facts set forth in this declaration are true, all statements made of my own knowledge are true, and all statements made on information and belief are believed to be true.

Further declarant sayeth not.

Dated: 5. DEC. 2005 By: _____
Anne Solveig Tonnesen

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RELATED PROCEEDINGS APPENDIX

None